

WHAT IS CLAIMED IS:

1. A method comprising:
 - 1 performing at least part of a digital subscriber line handshaking process by transmitting at least one handshaking signal via a telephone subscriber loop; and
 - 5 analyzing the at least one handshaking signal to detect a characteristic of the telephone subscriber loop.
2. The method of claim 1, further comprising:
 - 10 determining an operating function of an item of terminal equipment connected to the telephone subscriber loop based at least in part on the detected characteristic of the telephone subscriber loop.
3. The method of claim 2, wherein the determining includes determining whether to perform trellis coded modulation in the item of terminal equipment.
4. The method of claim 3, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.
- 15 5. The method of claim 4, wherein it is determined not to perform trellis coded modulation in the item of terminal equipment if the estimated length of the telephone subscriber loop is less than a predetermined length.
6. The method of claim 5, wherein the item of terminal equipment is a digital subscriber line modem.

7. The method of claim 2, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.
8. The method of claim 1, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.
- 5 9. The method of claim 1, wherein the analyzing includes comparing a power spectrum density of upstream signal carriers to a power spectrum density of downstream signal carriers.
10. The method of claim 9, wherein the analyzing also includes comparing a power spectrum density of a first group of downstream signal carriers to a power spectrum density of a second group of downstream signal carriers, wherein each signal carrier of the first group of downstream signal carriers is at a higher frequency than each signal carrier of the second group of downstream signal carriers.
11. The method of claim 1, wherein the analyzing includes comparing a power spectrum density of a first group of downstream signal carriers to a power spectrum density of a second group of downstream signal carriers, wherein each signal carrier of the first group of downstream signal carriers is at a higher frequency than each signal carrier of the second group of downstream signal carriers.
- 15 12. The method of claim 1, further comprising:
determining, based at least in part on the detected characteristic of the telephone subscriber loop, a parameter for a digital subscriber line training process.

13. The method of claim 12, wherein the determined parameter is used for one of (a) an equalizer function, (b) a timing recovery function, and (c) an automatic gain control function.

14. The method of claim 1, further comprising:

5 predicting a digital subscriber line service data rate for the telephone subscriber loop on the basis of the detected characteristic of the telephone subscriber loop.

15. A method comprising:

detecting a characteristic of a telephone subscriber loop; and

10 determining an operating function of an item of terminal equipment connected to the telephone subscriber loop based at least in part on the detected characteristic of the telephone subscriber loop.

16. The method of claim 15, wherein the determining includes determining whether to perform trellis coded modulation in the item of terminal equipment.

17. The method of claim 16, wherein the detected characteristic of the telephone 15 subscriber loop is an estimated length of the telephone subscriber loop.

18. The method of claim 17, wherein it is determined not to perform trellis coded modulation in the item of terminal equipment if the estimated length of the telephone subscriber loop is less than a predetermined length.

19. The method of claim 18, wherein the item of terminal equipment is a digital subscriber line modem.

20. An apparatus comprising:

a memory;

5 a processor coupled to the memory to:

receive at least one handshaking signal transmitted via a telephone subscriber loop in connection with a digital subscriber line handshaking process; and

analyze the at least one handshaking signal to detect a characteristic of the telephone subscriber loop.

10 21. The apparatus of claim 20, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

22. The apparatus of claim 21, wherein the processor is also to determine not to perform trellis coded modulation if the estimated length of the telephone subscriber loop is less than a predetermined length.

15 23. An apparatus comprising:

means for receiving at least one handshaking signal transmitted via a telephone subscriber loop in connection with a digital subscriber line handshaking process; and

means for analyzing the at least one handshaking signal to detect a characteristic of the telephone subscriber loop.

24. The apparatus of claim 23, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

25. The apparatus of claim 24, further comprising:

means for determining not to perform trellis coded modulation if the estimated
5 length of the telephone subscriber loop is less than a predetermined length.

26. An apparatus comprising:

a storage medium having stored thereon instructions that when executed by a machine result in the following:

receiving at least one handshaking signal transmitted via a telephone
10 subscriber loop in connection with a digital subscriber line handshaking process; and
analyzing the at least one handshaking signal to detect a characteristic of the telephone subscriber loop.

27. The apparatus of claim 26, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

15 28. The apparatus of claim 27, wherein the instructions stored on the storage medium, when executed by a machine, also result in:

determining not to perform trellis coded modulation if the estimated length of the telephone subscriber loop is less than a predetermined length.

29. An apparatus comprising:

20 a memory;

a processor coupled to the memory to:

 detect a characteristic of a telephone subscriber loop; and

 determine, based at least in part on the detected characteristic of the telephone subscriber loop, an operating function of an item of terminal equipment

5 connected to the telephone subscriber loop.

30. The apparatus of claim 29, wherein the determination of the operating function includes determining whether to perform trellis coded modulation.

31. The apparatus of claim 30, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

10 32. The apparatus of claim 31, wherein the processor is also to determine not to perform trellis coded modulation if the estimated length of the telephone subscriber loop is less than a predetermined length.

33. An apparatus comprising:

 means for detecting a characteristic of a telephone subscriber loop; and

15 means for determining, based at least in part on the detected characteristic of the telephone subscriber loop, an operating function of an item of terminal equipment connected to the telephone subscriber loop.

34. The apparatus of claim 33, wherein the determining of the operating function includes determining whether to perform trellis coded modulation.

35. The apparatus of claim 34, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

36. The apparatus of claim 35, further comprising:

means for determining not to perform trellis coded modulation if the estimated
5 length of the telephone subscriber loop is less than a predetermined length.

37. An apparatus comprising:

a storage medium having stored thereon instructions that when executed by a machine result in the following:

detecting a characteristic of a telephone subscriber loop; and
10 determining, based at least in part on the detected characteristic of the telephone subscriber loop, an operating function of an item of terminal equipment connected to the telephone subscriber loop.

38. The apparatus of claim 37, wherein the determining of the operating function includes determining whether to perform trellis coded modulation.

15 39. The apparatus of claim 38, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

40. The apparatus of claim 39, wherein the instructions stored on the storage medium, when executed by a machine, also result in:

determining not to perform trellis coded modulation if the estimated length of the
20 telephone subscriber loop is less than a predetermined length.

41. A system comprising:

a radio frequency transceiver; and

a digital subscriber line modem coupled to the radio frequency transceiver, the digital subscriber line modem including:

5 a memory;

a processor coupled to the memory to:

receive at least one handshaking signal transmitted via a telephone subscriber loop in connection with a digital subscriber line handshaking process; and

analyze the at least one handshaking signal to detect a

10 characteristic of the telephone subscriber loop.

42. The system of claim 41, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

43. The system of claim 42, wherein the processor is also to determine not to perform trellis coded modulation if the estimated length of the telephone subscriber loop is less 15 than a predetermined length.

44. A system comprising:

a radio frequency transceiver and

a digital subscriber line modem coupled to the radio frequency transceiver, the digital subscriber line modem including:

20 a memory;

a processor coupled to the memory to:

 detect a characteristic of a telephone subscriber loop; and

 determine, based at least in part on the detected characteristic of the telephone subscriber loop, an operating function of an item of terminal equipment

5 connected to the telephone subscriber loop.

45. The system of claim 44, wherein the determination of the operating function includes determining whether to perform trellis coded modulation.

46. The system of claim 45, wherein the detected characteristic of the telephone subscriber loop is an estimated length of the telephone subscriber loop.

10 47. The system of claim 46, wherein the processor is also to determine not to perform trellis coded modulation if the estimated length of the telephone subscriber loop is less than a predetermined length.